



**3M Company – Menomonie Plant**  
**Baseline Report for the Cooperative Agreement**  
**Between 3M and the Department of Natural Resources**  
**April 1, 2003**

## **Introduction**

On October 1, 2002, following a 30 day public comment period, the Wisconsin Department of Natural Resources (WDNR) and 3M Company - Menomonie signed a Cooperative Environmental Agreement (CEA) for the purpose of providing a reduced air emissions cap, waste reduction based on production activity, and operation flexibility.

The CEA began the Title V air permitting process to produce a facility-wide air permit for 3M Company - Menomonie. The operating permit for the facility will combine environmental management commitments beyond those ordinarily required by WDNR rules with operational flexibility for the manufacturing facility proportional to environmental gains. The permit will reduce the facility's existing allowable volatile organic compound (VOC) emissions of more than 400 tons per year (tpy), as authorized by the combination of existing air permits, to a VOC emission cap of 249 tpy. The facility will be subject to any changes promulgated by New Source Review (NSR) applicable to the facility for the duration of the Agreement. The resulting facility-wide permit will establish 3M Company - Menomonie as a synthetic minor source for purposes of Prevention of Significant Deterioration (PSD) rules contingent upon rules promulgated and applicable to the facility for the duration of this Agreement.

In exchange for agreeing to comply with more stringent limitations than currently required, 3M Company - Menomonie and the WDNR will design operational flexibility into the agreement that would be accomplished through a number of pre-approved facility changes, subject to the limitations expressed in section XI of this agreement. All such requirements would be identical to corresponding requirements that would be put in place had the pre-approved project been permitted under WDNR's existing permitting workflow.

This Environmental Cooperative Agreement also includes an Interested Persons Group according to section VII. The group will provide consultation to the facility during the Title V permit process and will continue to provide a valuable, additional channel of communication between 3M and the surrounding community during the life of the Agreement.

This Agreement was developed under Wisconsin's Environmental Cooperation Pilot Program pursuant to Section 299.80, Wis. Statutes, to evaluate innovative environmental regulatory methods including whole-facility regulation.

## Background

3M Company is a worldwide supplier of consumer and industrial products and offers a full range of these products and support services for their entire customer markets. The 3M Company vision is to be the most innovative enterprise and the preferred supplier to their customers.

The 3M Company - Menomonie facility consists of a variety of specialized business units that develop and market various products for consumer and industrial use. The site manufactures a variety of products including:

- ❑ Brightness enhancement film for electronic displays
- ❑ Adhesive film for flexible printing circuits & automotive weather-stripping
- ❑ Vacuum metal-coated products used in optical, protective, conductive, or reflective applications
- ❑ Micro-abrasives for the semiconductor industry
- ❑ Re-closeable hook fastening products
- ❑ Coated adhesive tapes for the electrical products markets
- ❑ High temperature ceramic fibers
- ❑ Electromagnetic detection strips used in library books and other items for security applications
- ❑ Reflective sheeting used in the traffic sign and traffic construction safety industries
- ❑ Membrane electrode assemblies (MEA's) to the power industry

The business concept of this facility is that each business unit manage its projects, while the site staff groups (part of the Optical Systems Division group of the corporation) will provide the essential staff services. The staff group consists of the Environmental, Health, Safety, & Security group, Human Resource Administration, Information Technology Support, Plant Engineering, and Logistics.

The present 3M Company – Menomonie site charter is to provide a long-term semi-works site near 3M Center laboratories, which provides early manufacturing capability. Another essential part of the charter is to provide a long term manufacturing site for high technology and state-of-the-art product lines with the resident site staff maintaining responsibility for overall site management.

The 3M Company is committed to its environmental responsibilities to protect its employees and the communities in which they reside. 3M is proud of their record of environmental stewardship and commitment. Since 1990, 3M operations worldwide have reduced volatile organic air emissions by 92 percent and manufacturing releases to water by 84 percent. 3M is continuously working on new manufacturing processes and new formulations to help bring emissions down even further. 3M has a corporate goal of reducing TRI (toxic release inventory) emissions per pound of product 50 percent by 2006. In October of 2002, 3M was presented with the Keep America Beautiful 2002 Vision for America Award for 3M's history of environmental accomplishments and vision for sustainable development. In announcing the annual award, KAB noted 3M's early dedication to continuously minimize environmental impact as far back as 1975 when the environmental movement was first gaining momentum in America.

3M Company has had an active environmental program since 1975. A long-standing 3M environmental business program, established that same year, entitled the 3P program (Pollution Prevention Pays) has been employed to identify environmental opportunities for the site. 3P has become an integral part of 3M's culture and has reduced costs and improved efficiency, and has helped make 3M Company a model of environmental management. Pollution prevention activities have also been promoted through a series of internal cost reduction and waste minimization programs such as Challenge 95 (1990-1995), Environmental Goals 2000 (1996 – 2000) and the current program entitled Environmental Targets 2005 (ET'05).

In December 2000 3M Company - Menomonie received ISO 14001 registration, an international environmental management standard, by a third party auditor. Besides its own internal programs, the facility has been recognized for its environmental stewardship by the State of Wisconsin and the Environmental Protection Agency (EPA). In March, 2001 the facility received the Governor's Award for Excellence in Hazardous Waste Reduction and in June was recognized as the recipient of the John Brogan Environmental Achievement Award, the WDNR's highest form of recognition given to a business, local government, or a nonprofit organization for outstanding achievements in environmental protection. In August 2002 the EPA recognized the plant as qualified for membership into the National Environmental Performance Track (NEPT) program. The NEPT is a voluntary partnership program that recognizes and encourages top environmental performers to go beyond compliance with environmental regulations and commit to continuous environmental improvement.

Under Section XII of the Agreement, 3M Company - Menomonie agrees to submit a baseline report within 180 days of the signing. The following report reflects the performance evaluation conducted pursuant to the Agreement. It has been shared with the Interested Persons Group and is available for public inspection at the 3M Company–Menomonie facility or can be obtained by requesting a paper copy or by e-mail.

## **Baseline Performance Evaluation**

### **Regarding the Interested Persons Group:**

The 3M Company–Menomonie Interested Persons Group is composed of representatives from business, government and academia in the Menomonie area who are interested in environmental stewardship and the impact of manufacturing on local communities. The first initial meeting was held on August 15, 2002. This was prior to the Cooperative Environmental Agreement (CEA) 30-day public comment period that began September 1, 2002 and before the actual agreement signing on October 1, 2002. This meeting was conducted to give the attendees background information on the CEA program and a general overview of the Menomonie facility. Information was shared about Menomonie's overall organization and the type of manufacturing being conducted at the facility. An overview was presented of existing environmental permits, current regulatory applicability, current permitting constraints, past environmental performance, the 2002 Environmental Management System (EMS), progress towards 2002 EMS objectives and targets, an overview of the 3P Program, and proposed pre-approval protocol offered by 3M.

Group members include the following individuals:

- ❑ Mike Beaupre, Director, Indianhead Enterprises
- ❑ Keith Bergeson, Dunn County Department of Public Health
- ❑ Mark Harings, Wisconsin Department of Natural Resources
- ❑ Edward M. Jenson, Superintendent, Menomonie Wastewater Utility
- ❑ Dr. Martin Ondrus, UW-Stout, Chemistry Department
- ❑ Ed Smith, Menomonie City Council Member and Plan Commission Member
- ❑ Barbara Thomas, current chair of the Chippewa Valley (WI) group of the Sierra Club

### **Regarding ISO 14001 Recertification and Evaluation of the EMS:**

The third party auditor reissued recertification of the EMS to conformance to the ISO 14001 standard to the facility on December 7, 2002. This completed the two-year cycle of surveillance audits that reviewed all elements of the EMS. The two surveillance audits conducted in 2002 resulted in one action request and ten observations noted concerning the EMS. The action request has been cleared and the observations for system improvements have been addressed. A copy of the current registration certificate, issued by the third party auditor, Underwriters Laboratories (UL), is on their website. Go to the Internet address <http://www.ul.com/> and search for file # A8582 in the certifications menu.

### **Regarding a Summary of 2002 EMS Targets & Objectives:**

The 3M-Menomonie facility has identified its environmental aspects and ranked them based on the significance of their environmental impact. Objectives and targets for 2002 were developed in December 2001 and approved by upper management in January 2002. Several of the targets and objectives are based around the Environmental Targets 2005 environmental initiatives (waste, VOCs, TRI chemical releases).

The 3M Company - Menomonie facility adopted the following Environmental Objectives and Targets for 2002 at Management Review on January 28, 2002:

<b><u>Objective #1:</u></b>	<b><u>Impact:</u></b>	<b><u>Aspect:</u></b>	<b><u>Significance:</u></b>
Submit at least one approved 3P project in 2002	Waste reduction	Process and plant activities and services related to waste and energy reduction	Reduction of overall waste or environmental releases from the site

#### **Target #1:**

Submit at least one approved 3P project for the facility by 12/31/2002.

#### **Details:**

The goal is a total of 6 approved 3P program submittals by the end of 2005. Three approved projects were submitted in 2001. Therefore, at least 3 new projects ideas are needed in 2002-2005.

#### **Results:**

A 3P program was submitted and approved on 9/24/2002 to reduce the generation of scrap hot melt adhesive on a tape coater by adhering to the following objectives:

1. Compounder material throughput reduction during downtimes less than 1/2 hour.
2. Compounder shutdown during downtimes exceeding 1/2 hour.
3. Limitation of experimental adhesive generation through dedication to higher factor designed experiments.
4. Increasing the effectiveness of purge operations.
5. Sequencing and scheduling products to minimize the need for purge operations.
6. Implementing start-up procedures focusing on minimizing adhesive output.

In 2001, \$5,883 was saved in disposal costs and \$166,500 in raw materials. This project also reduced waste produced (hazardous and solid waste) by 111 tons.

**Objective #2:**

Develop and institute an integrated contingency plan (ICP) for emergency situations

**Impact:**

Emergency Preparedness

**Aspect:**

Site emergency preparedness

**Significance:**

Simplify emergency planning and response based on the scenario

**Target #2:**

Develop and institute an ICP by 12/31/2002

**Details:**

The ICP will place into one single plan the following legally required plans that call for emergency response planning: OSHA HAZWOPER plan, RCRA contingency plan, LEPC plan, OSHA Emergency Action Plan, OSHA & 3M PSM standard/guidelines, EPA SPCC spill plan, EPA RMP "general duty" clause.

**Results:**

The basic outline for the plan was developed using the USEPA template document. Development continues on the plan. This will carry over into 2003. Flowcharting of various emergency scenarios are being completed for the plan. An example of the emergency flowchart for an anhydrous ammonia release is shown in Attachment A.

**Objective #3:**

Convert the WSPs (waste stream profiles) that qualify under the universal waste exemption (light bulbs, lamps etc.) to decrease the total pounds of hazardous waste shipments by 1 % from 2001 levels

**Impact:**

Hazardous waste reduction

**Aspect:**

Plant activities related to the generation of waste classified under the universal waste category

**Significance:**

Take advantage of the universal waste exemption that had not been previously used by the facility

**Target #3:**

Reduce hazardous waste levels by 1% by reclassifying waste stream profiles that can qualify under the universal waste exemption.

**Details:**

Investigate converting the following WSPs to the universal waste exemption: mercury switches, spent fluorescent bulbs, HP/mercury vapor lamps, and PC boards.

**Results:**

A reduction of the total hazardous waste pounds was achieved by recycling fluorescent lamps and other lighting bulbs (HID, mercury vapor, HPS) through the Lamtracker UPS program. The goal of this target was a 1% or greater reduction. The internal change went into effect in April 2002, with the plant's first shipment of bulbs occurring in September 2002. The actual reduction from 2001 was 0.6% as the target might have been achieved if the program had been started earlier in 2002.

**Objective #4:**

Reduce VOC (volatile organic compounds) emissions per pound of good output by 5% in 2002 as compared to 2001.

**Impact:**

VOC air emissions

**Aspect:**

VOC-producing processes in identified departments

**Significance:**

A 5% reduction each year is required to meet the corporate goal of a 25% reduction by the end of 2005 (2000 base year)

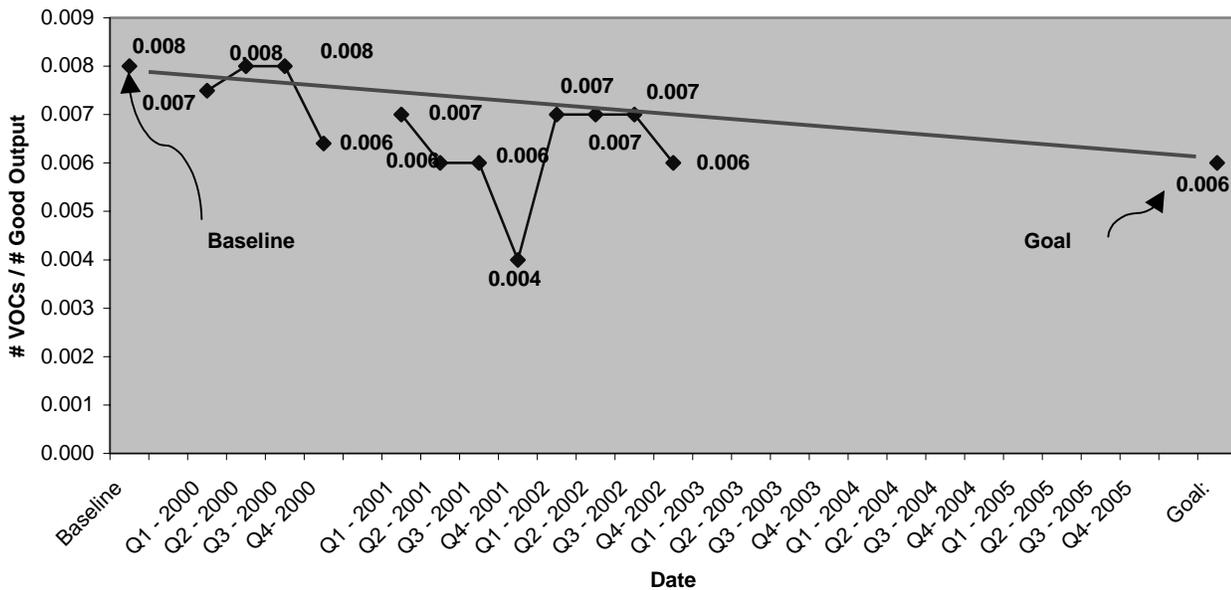
**Target #4:**

Reduce # VOC/ # good output (finished, semi-finished, by-product) by 5% from previous year (2001).

**Results:**

There was a 17% increase in pounds of VOCs released/pound of good output in 2002 as compared to 2001, but the facility has shown a 13% overall decrease in VOCs released since the base year 2000. The facility remains on target to meet the 25% reduction goal by the end of 2005. Refer to Figure 1 below.

Figure 1: # Vocs Released / # Good Output



**Objective #5:**

Reduce by 10% reportable releases of TRI (Toxic Release Inventory) chemicals reported in 2000 / pound of good output in 2001.

**Impact:**

Waste reduction

**Aspect:**

Processes related to TRI air releases

**Significance:**

Corporate ET'05 goal of a 50% reduction in the release of TRI reportable chemicals/pound of good output by 2006.

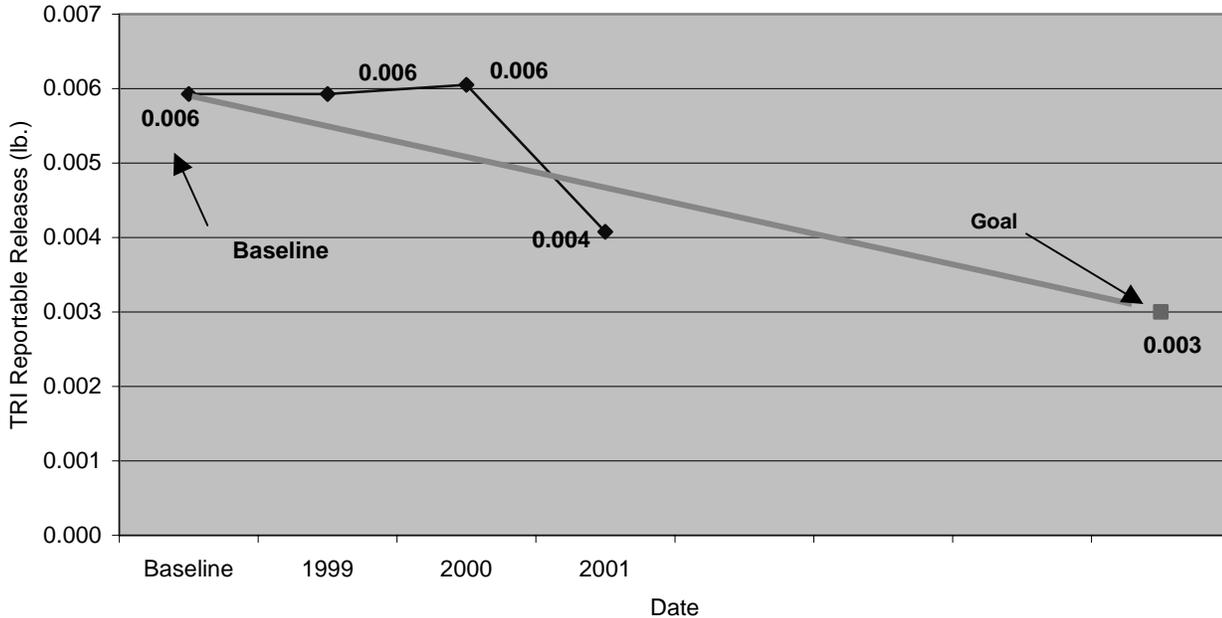
**Target #5:**

Reduce 2001 reportable TRI air emissions/ # good output by 10% compared to year 2000 reported TRI releases.

**Results:**

The reportable TRI chemical release goal showed a 33% reduction compared to 2001. This is shown in Figure 2.

**Fig. 2: TRI Reportable Releases / # Good Output**

**Objective # 6:**

Reduce solid & chemical waste produced/pound of good output another 5% in 2002 as compared to 2001.

**Impact:**

Waste reduction

**Aspect:**

Activities, products, and services (APS) that produce solid and chemical waste materials

**Significance:**

A 5% reduction each year is required to meet the corporate goal of a 25% reduction by the end of 2005 (2000 base year)

**Target # 6:**

Reduce solid and chemical waste/ # good output by 5% in 2002 based on levels reported in 2001.

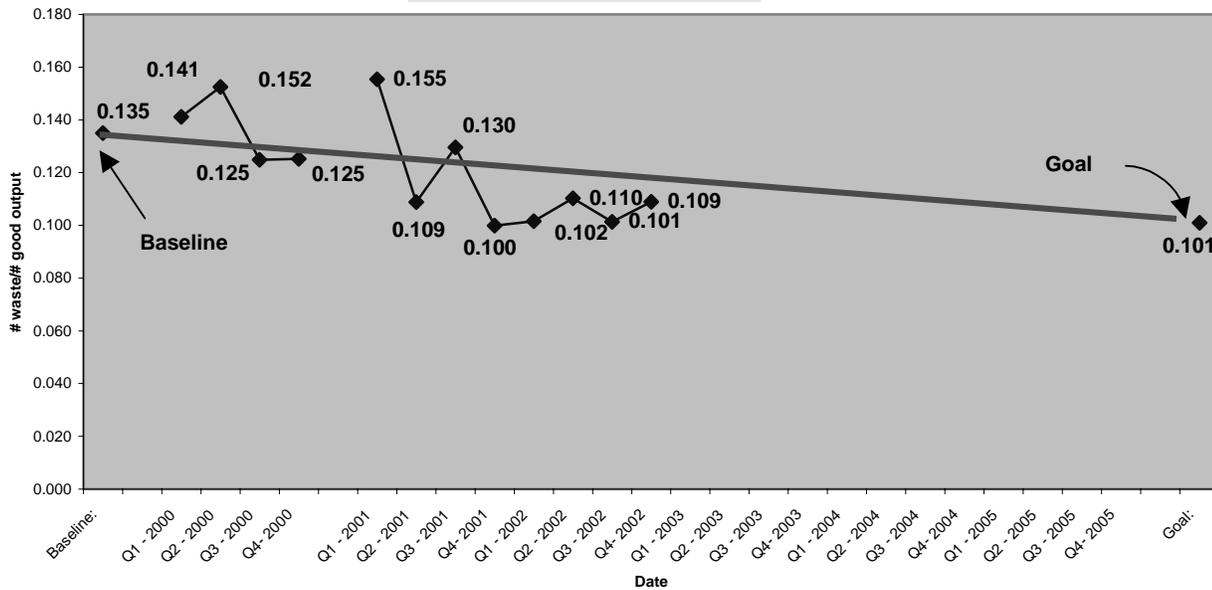
**Details:**

Set up planning/review meetings with all departments to discuss and track short term and long term plans to reduce wastes. Discuss possible 3P and Six Sigma projects for waste reductions. Track emissions and report quarterly under the 3M ET'05 goals program.

**Results:**

The facility achieved a 14% reduction of waste (solid & chemical hazardous and non-hazardous waste) / # good output in 2002 as compared to 2001. Refer to Figure 3.

Fig. 3: # Waste/ # Good output



### Regarding Changes to the 2003 EMS Targets & Objectives:

Listed below are the 2003 EMS Objectives and Targets. The ET'05 program objectives continue with an additional 5% reduction from previous year performance in VOC emissions and waste produced per pound of good output. This is consistent with the five-year plan to reduce these wastes 25% by the end of 2005. The reduction of TRI chemical releases to stay on target to reduce these releases by 50% per pound of good output has also been identified as a 2003 objective and target. In addition, the completion of the ICP plan has been targeted for a mid-year completion and the EMS documentation system will be migrated to another database that is supported by corporate information technology.

#### 2003 EMS Objectives & Targets

- ❑ Develop and institute the ICP by 6/1/2003.
- ❑ Reduce releases of reportable TRI chemicals/ pound of good output another 10% in 2003 to keep pace with the overall objective of a 50% reduction/pound of good output by the end of 2005 (1999 base year).
- ❑ Reduce VOC emissions per pound of good output another 5% in 2003 to keep pace with reducing overall VOC emissions 25% per pound of good output by the end of 2005 (2000 as the base year).
- ❑ Reduce waste/pound of good output another 5% in 2003 to keep pace with an overall 25% reduction by the end of 2005.
- ❑ Submit at least one approved 3P (Pollution Prevention Pays) project in 2003.
- ❑ Meet the requirements of the Wisconsin DNR Cooperative Environmental Agreement and the USEPA National Environmental Performance Track for 2003.
- ❑ Migrate the EMS documentation system to the QDS (Quality Document System) that is consistent with the facility quality, manufacturing, and other EHS (environmental, health, and safety) document systems.

### Regarding Actual Waste Reductions:

A summary of 2001/2002 3M-Menomonie wastes and air emissions is shown in Table 1:

Table 1: 2002/2001 Waste & Air Emissions

Type of Waste	2002	2001	% Change	Comment
Regulated Hazardous Waste:	127,650 lb.	129,761 lb.	- 1.7%	All hazardous waste sent to corporate waste incinerator, Cottage Grove, MN.
Parts washer solvents	505 lb.	867	- 42%	Sent to Safety-Kleen, Lacrosse, WI
Non-regulated chemical waste	96,946 lb.	74,852	+ 23 %	Sent to corporate incinerator
Landfill waste	373, 716 lb.	553,860 lb.	- 33 %	Sent to Dunn County Waste Management
Secured solid Waste	1,214,487 lb.	1,087,558	+ 10.5 %	Sent to secured waste facility for energy burn
General solid waste	669,094 lb.	676,080	- 1.0 %	Sent to Barron Co. Incinerator for energy burn
VOC emissions	161,612 lb.	131,637	+ 18.5 %	Reported on WDNR annual air emissions inventory (AEI)
HAP (hazardous air pollutants) emissions	113,064	91,673	+ 19.0 %	Reported on WDNR annual air emissions inventory (AEI)
Reportable TRI chemical releases	104,000 (est.)	84,500	+ 18.8 %	Reported on EPCRA 313 annual report

Waste and emissions “normalized” or adjusted for changes in production activity during these same periods are shown in Attachment B at the end of this report.

### Regarding any Public Inquiries or Complaints Concerning the Agreement:

3M Company-Menomonie is not aware of any public inquires or complaints concerning this agreement that has been brought directly to their attention during the 30 day public comment period or the subsequent time since the agreement was signed on 10/1/2002.

### **Regarding any Non-performance with the Agreement from the Previous Year:**

3M Company – Menomonie is not aware of any non-performance issues related to this agreement at this time.

### **Regarding any Success/Improvements not Specifically Outlined in the Agreement:**

The following environmental gains have been accomplished due in part to internal environmental programs and development of the EMS to show continuous improvement in the environmental management system:

- ❑ Six Sigma (a 3M formalized problem solving/decision making process) projects identified to improve record keeping requirements and reduce solvent emissions on a plant tape coating line.
- ❑ Expanded use of the universal waste exemption to recycle lamps, heavy metal batteries, lighting ballasts through the use of the Lamptracker UPS program
- ❑ Tracking solid and chemical wastes using an environmental accounting system called the Menomonie Waste Control System (WCS) developed from a plant inventory control system.
- ❑ Documentation of the hazardous waste process through the use of flowcharting – handling, labeling, manifesting, shipping requirements, etc
- ❑ Work instructions in EMS on hazardous waste label printing for departmental use
- ❑ Menomonie ET'05 database (spreadsheets/charting) to track quarterly performance of environmental goals
- ❑ NEPT acceptance committed to environmental improvements (waste reductions) by 2004
- ❑ Electronic incident reporting & investigation system that includes corrective/preventive action item assignment and follow-up
- ❑ Corporate EHS (environmental, health, & safety) Scorecard/CIP (continuous improvement plan) requirements that include environmental performance requirements (ET'05 goals) and regular management review
- ❑ Electronic training and documentation of EMS awareness and annual waste training topics (self-study)
- ❑ More formalized Emergency Response Team (ERT) exercises/drill concerning environmental spills

- ❑ Actively working with corporate Reverse Supply Chain Services to find markets for various adhesives and plastic films that previously had to be sent to the landfill or sent to a secured waste site for disposal
- ❑ Wet scrubber air emission control added to CF-5 ceramic fibers furnace to reduce air emissions

### **Regarding Operational Flexibility:**

3M-Menomonie and the WDNR met on 10/25/2002 to discuss and establish a timeline for development of the Title V permit that identifies conditions of operations while under the CEA. Wendy Reno, Menomonie's Corporate Environmental Engineering contact, submitted the revised Title V application to the WDNR on 01/07/2003 for their review. A meeting was held at 3M-Menomonie on 2/11/2003 to clarify information submitted in the application. 3M provided the WDNR with an example of "flexible permitting" that expedited the construction and operating permit process.

Since the signing of this agreement on October 1, 2002, 3M has requested two new construction permits for new air sources. In addition, 3M was issued an operating permit for the Optical Systems Division to allow modification of the permit to begin construction of a new process line for production of brightness enhancement film. Since the final operational flexibility of this agreement has not been determined at the time of this report, no evaluation can be conducted concerning the reduction of record keeping and administrative requirements due to these changes.

The key milestone of the Agreement was to have the facility-wide Title V air permit submitted and approved by the second quarter, 2004.

Additional time requirements for fulfilling this agreement include:

<u>Requirements Added:</u>	<u>Additional Time Required:</u>
Preparation and submittal of new Title V air permit application	240 hours
Compiling this Baseline Report	40 hours
Managing the Interested Persons Group	18 hours/year

At this time there have been no changes in the management of the existing air permits or required reporting or record keeping to determine reductions in time related to this activity.

### **Regarding Overall Assessment of the Success of the Agreement:**

Since this is the 180-day baseline report, no specific assessment can be made at this time concerning the agreement. 3M Company - Menomonie feels that success of the agreement relies on obtaining the facility-wide Title V operating permit in a timely manner and finalizing the process of operational flexibility as outlined in the Agreement.

Questions and requests for additional information should be directed to Michael Wendt, EHS Department, at the address below:

3M Company – Menomonie Plant  
 1425 Stokke Parkway  
 Menomonie, WI 54751  
 Phone: 715/235-5541  
 E-mail: [mrwendt1@mmm.com](mailto:mrwendt1@mmm.com)

Attachment A: Example Flowchart from ICP

**Code Yellow :  
Spill Emergency**

